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ABSTRACT

This report presents Advanced Placement (AP) Examination results for the Wake County Public School System (WCPSS), North Carolina, in comparison with other large school systems, the state of North Carolina, the southern United States, and the entire United States. Participation of WCPSS students in AP testing has increased about 1% annually from approximately 16% in 1997 to approximately 20% in 2001. Participation varies widely by ethnic group, however, and 80% of students enrolled in AP classes are white. Asian students are also over-represented in AP course enrollment. As participation in the AP program has increased for the WCPSS, the percent of students scoring 3 or higher on the AP examinations has decreased slightly, from 80% to 77%. However, the percentage of students scoring 3 or above was significantly higher than results for students in North Carolina, the South, and the United States. WCPSS performance was also higher than a sample of comparable school districts in Florida, Georgia, Maryland, and Virginia. This suggests that the WCPSS could increase participation rates while still maintaining scores comparable to other districts. (Contains 25 figures.) (SLD)

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ADVANCED PLACEMENT EXAM RESULTS 2000-2001

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ADVANCED PLACEMENT EXAM RESULTS
2000-01

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ADVANCED PLACEMENT EXAM RESULTS 2000-01

EXECUTIVE SUMMARY

The Advanced Placement (AP) program offers college-level courses to high school students. Many colleges and universities provide course credit to students who earn a high score on the end-of-year exams. Almost 60% of United States high schools offer AP course work, and more than 800,000 high school students participated in AP programs during the 2000-2001 school year (College Board, 2001). All 15 comprehensive high schools in the WCPSS offer AP courses. Enrollment in Wake County Public School System (WCPSS) AP courses was approximately 6,900 in 2000-01. Many students took more than one AP course. A total of 4,320 AP examinations were taken by 2,223 WCPSS students at the end of the school year. This report examines AP exam results for the WCPSS with comparisons to other large school systems, the state of North Carolina, the South, and the United States.

PARTICIPATION

Participation of WCPSS juniors and seniors in AP testing has increased about one percent annually from approximately 16% in 1997 to approximately 20% in 2001. Increase in participation is generally an indication that more students, with a wider range of preparation, have had the opportunity to take more advanced and challenging coursework and to perhaps earn college credit.

Participation by ethnic group, however, varies widely. While White students represented 71% of the 11th and 12th grade membership in 2000-01, 80% of students enrolled in AP courses were White. Asian students were also over-represented in AP courses enrollment. Asian students represented 5% of 11th and 12th grade membership but represented 11% of AP course enrollment. In contrast, Black students represented 21% of 11th and 12th grade membership and only 6% of students enrolled in AP courses. Hispanic/Latino students were also under-represented in AP course enrollment (they represented 2.3% of membership vs. 1.6% of AP course enrollment).

There were smaller differences in participation by gender, with female students slightly over-represented in AP course enrollment.

OVERALL PERFORMANCE

Scores on the AP exams range from 1 to 5, and many colleges and universities award course credit for a score of 3 or higher on the AP exams. Thus, one common measure of performance on the AP exams is the percent of students scoring 3 or higher.

As participation in AP testing has increased in the WCPSS over the last five years, the percent of students scoring 3 or higher has decreased slightly from 80% to 77%. The percent of WCPSS students scoring 3 or higher on the AP exams, however, was significantly higher than results for students in North Carolina, the South, and the United States. WCPSS performance was also higher than a sample of comparable large school districts in Florida, Georgia, Maryland, and

Virginia. This suggests that the WCPSS could increase participation rates while still maintaining scores comparable to other school districts.

The performance of WCPSS Asian, Hispanic/Latino, Native American, and White students on the AP exams was similar. The percent of Black students that scored 3 or higher on AP exams, however, was significantly lower (approximately 25 percentage points) than these groups. Male students performed slightly better than female students with 81% of males scoring 3 or higher compared to 75% of females.

PERFORMANCE ON SELECTED COURSES

AP exams are offered for 33 courses in 19 subject areas. WCPSS students took AP exams in 30 of the 33 courses. Five courses (Biology, Calculus AB, English Language and Composition, English Literature and Composition, and U.S. History) were selected for a closer look because a relatively large number of students take these exams in all WCPSS high schools. WCPSS performance on each of these courses was higher than the performance of students in North Carolina, the South, and the United States. WCPSS performance compared favorably to a sample of comparable large school districts in Florida, Georgia, Maryland, and Virginia.

SCHOOL RESULTS

There was large variation in the percentage of students in a school who took at least one AP exam each year. In 2000-01, Enloe High School (a magnet high school for gifted and talented students) had the highest participation rate at 47%, at the other high schools participation ranged from approximately 9% to 26%.

The percent of AP exam scores of 3 or higher varied greatly from school to school in 2000-01, from 51% at East Wake to 88% at Apex. All schools except East Wake and Garner exceeded the North Carolina average of 56.4% for the percent of scores 3 or higher. Athens Drive had the largest one-year increase in performance (+14.2 percentage points) and Garner High School had the largest one-year decrease in performance (-12.7 percentage points).

There were fairly wide differences between schools in each of the five courses examined. The WCPSS had strong overall performance in Calculus AB, and this was reflected in four schools having 100% of students scoring 3 or higher. On the other hand, there were two schools with less than 50% of students scoring 3 or higher on Calculus AB. In some courses the difference between schools in the percent of students scoring 3 or higher was as much as 66 percentage points.

CONCLUSIONS AND RECOMMENDATIONS

Overall, WCPSS performance on the AP exams has been strong. Yet there were wide differences in participation and performance among ethnic groups and schools. The WCPSS should study ways to improve equity in participation, particularly among Black and Hispanic/Latino students. In addition, the WCPSS should study areas of strength, as well as AP programs with strong results in other school districts, to see if there are strategies that can be adopted to improve performance in other AP courses.

ADVANCED PLACEMENT EXAM RESULTS 2000-01

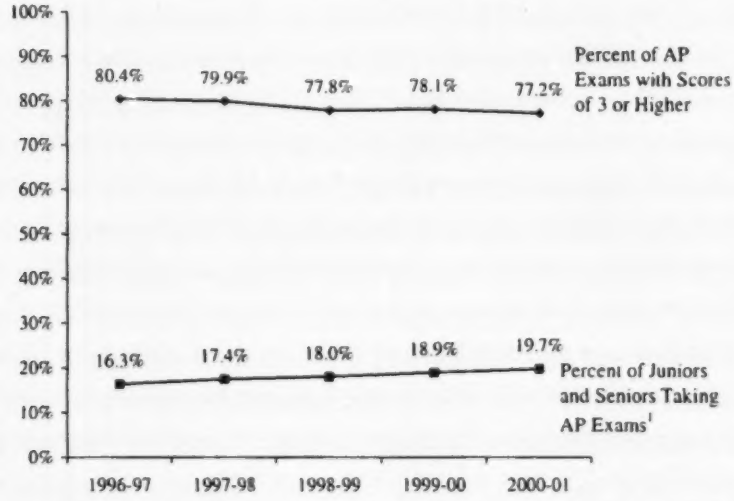
Administered each May, the 33 Advanced Placement (AP) Examinations test students' ability to perform at a college level on 19 subject areas (College Board, 2002). The College Board sponsors the AP program. Participating colleges may grant credit to students who have done well on the AP examinations.

- Taking an AP exam required a fee of $78 per exam in 2001. North Carolina's Department of Public Instruction covers testing fees for some students of low-income families.
- Examinations are scored on a five-point scale. The scale can be interpreted as follows: 1—no recommendation, 2—possibly qualified, 3—qualified, 4—well qualified, and 5—extremely well qualified. Many colleges and universities provide course credit to students scoring a 3 or higher.
- A previous report (*1998-99 Advanced Placement Exam Results* E&R Report No.00.21) provided a brief description of all AP courses offered in WCPSS.

OVERALL RESULTS

In 2000-01, 20% of WCPSS juniors and seniors took one or more Advanced Placement (AP) exams. Participation of juniors and seniors in AP testing has increased about one percentage point annually, from approximately 16% in 1997 to approximately 20% in 2001. This likely means that more students have had the opportunity to take more advanced and challenging coursework and to perhaps earn college credit. On average students take two AP exams. As the participation rate has increased, the percent of students achieving a score of 3 or higher for all exams combined has decreased slightly (3.2 percentage points) over the same five-year period (see Figure 1).

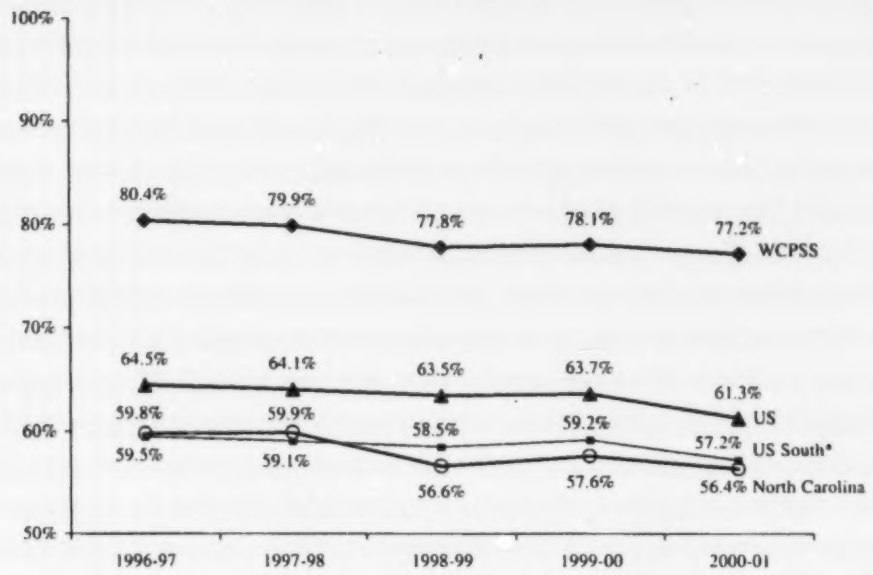
Figure 1
WCPSS Participation and Performance on AP Exams
1997 to 2001



[1]Based on total number of students in grades 11 and 12 taking AP exams and final membership for these grades.

As shown in Figure 2 and 3, the WCPSS performed higher than North Carolina, the U.S. South, and the United States in the percent of AP exams scores of 3 or higher. The percent of AP exam scores of 3 or higher has decreased for these comparison groups, as they have in the WCPSS, as the percent of students taking AP exams has increased for these groups.

Figure 2
Percent of Advanced Placement Exam Scores of 3 or Higher for the WCPSS, North Carolina, Southern Region, and United States 1997 to 2001



* The U.S. South as defined by The College Board includes Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia.

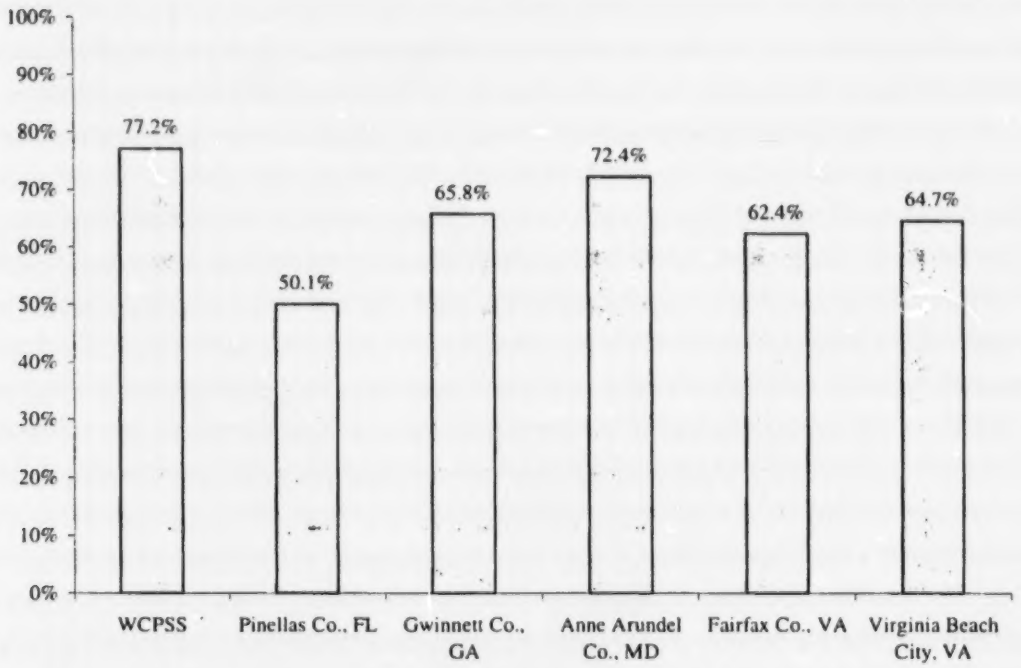
Figure 3
Advanced Placement Results for the WCPSS, North Carolina, Southern Region, and United States 1997 to 2001

AP Result	Year	WCPSS	NC	US South	US
Average Exam Score	1996-97	3.42	2.87	2.88	3.02
	1997-98	3.44	2.89	2.88	3.02
	1998-99	3.40	2.81	2.87	3.02
	1999-00	3.38	2.82	2.88	3.01
	2000-01	3.38	2.81	2.84	2.95
Percent of Scores 3 or Higher	1996-97	80.4%	59.8%	59.5%	64.5%
	1997-98	79.9%	59.9%	59.1%	64.1%
	1998-99	77.8%	56.6%	58.5%	63.5%
	1999-00	78.1%	57.6%	59.2%	63.7%
	2000-01	77.2%	56.4%	57.2%	61.3%

COMPARISON WITH OTHER SCHOOL DISTRICTS

In Figure 4 the overall 2001 AP results for the WCPSS are compared to large school districts in other states. With 77.2% of students scoring 3 or higher on the AP exams, the WCPSS success rate was higher than these other school districts. It should be noted that some of these school districts have a higher rate of student participation in the AP exams than the WCPSS, which may account in part for their lower success rate (see *Advanced Placement Exams 1999-2000: Results for WCPSS and EBN Districts* E&R Report No. 01.35). This suggests that the WCPSS could increase participation rates while still maintaining scores comparable to other school districts.

Figure 4
Percent of Advanced Placement Exam Scores of 3 or Higher for the WCPSS and Comparable Large School Districts 2000-01

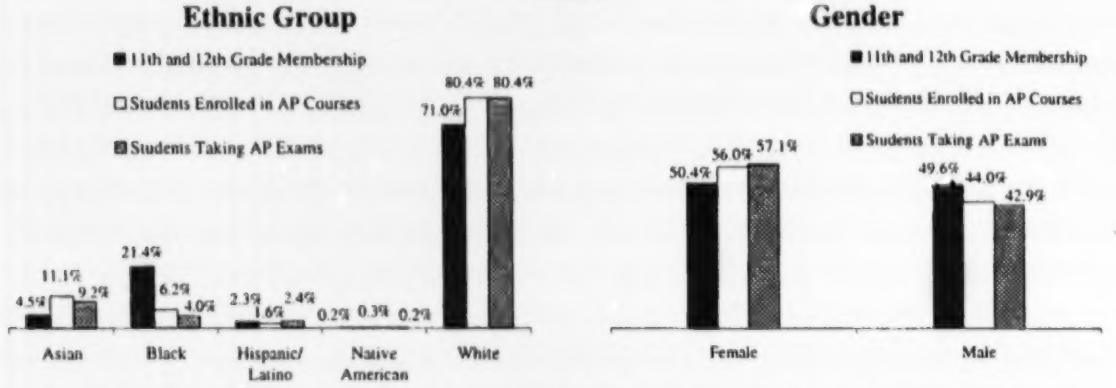


ETHNIC AND GENDER COMPARISONS

To assess AP participation, the representativeness of students in membership in 11th and 12th grade was compared to their representativeness in AP course enrollments and in taking AP exams. Comparisons by ethnic group and by gender are shown in Figure 5.

Asian and White students were over-represented in their enrollment in AP courses and in the number of AP exams taken compared to the percent of the 11th and 12th grade membership they represent. In contrast, Black students were the most under-represented. Black students represented 21.4% of 11th and 12th grade students, yet they represented only 6.2% of students enrolled in AP courses and 4.0% of students taking AP exams. Hispanic/Latino students were

Figure 5
Representativeness by Ethnic Group and by Gender in Student Membership, Enrollment in Advanced Placement Courses, and Students Taking AP Exams
2000-01

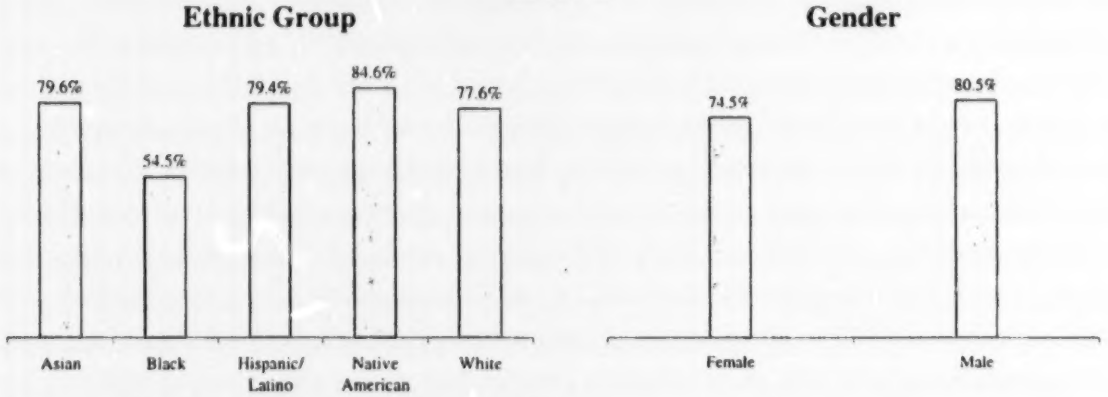


Note: Eleventh and twelfth grade membership and enrollment in AP courses are based on March 2001. Students take AP exams in May each year.

also underrepresented, but by a much smaller margin. Native American students were about equally represented in AP course enrollment and in taking AP exams. Female students were somewhat more likely than male students to enroll in AP courses and to take AP exams.

Figure 6 shows the percent of AP exam scores of 3 or higher in 2001 by ethnic group and by gender. For all racial groups except Blacks, the percentage of exams with scores 3 or higher was greater than the 77.2% for all AP exams taken by WCPSS students. Only 54.5% of AP exams were scored 3 or higher for Black students. The next closest group, White students, had 77.6% of AP exams scored 3 or higher. Native American students had the highest percentage of scores of 3 or higher on the AP exams (84.6%). Asian (79.6%), Hispanic/Latino (79.4%), and White (77.6%) students scored 3 or above in similar proportions.

Figure 6
WCPSS Percent of Advanced Placement Exam Scores of 3 or Higher by Ethnic Group and by Gender
2000-01



Note: Native American only represents results for 5 students.

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RESULTS BY AP COURSE

There are 33 courses in the areas of art, foreign language, language arts, mathematics, science, and social studies for which there is an AP exam. Students in the WCPSS took AP exams for 30 of the AP courses. Figure 7 summarizes the results of all 30 AP exams. In some courses so few students took the AP exam that the results would not be a reliable indication of student performance. For these reasons, this report focuses on five courses for which a large number of students took AP exams: Biology, Calculus AB (the equivalent of a first college course in calculus), English Language and Composition, English Literature and Composition, and U.S. History.

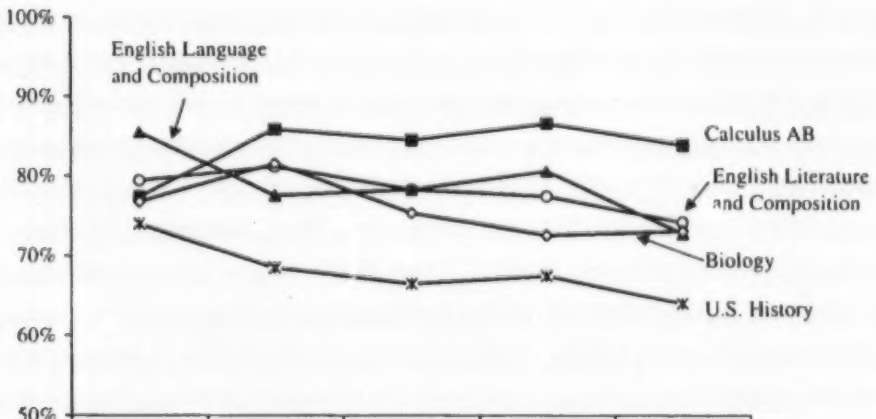
Figure 7
WCPSS Number of Advanced Placement Exams Taken, Number of Schools Represented, and Percent of Exam Scores of 3 or Higher by Course
2000-01

Course	Number of Exams Taken	Number of Schools	Percent of Scores of 3 or Higher	Course	Number of Exams Taken	Number of Schools	Percent of Scores of 3 or Higher
Art: History	16	3	93.8	French: Language	28	6	82.1
Art: Studio Drawing	8	1	87.5	French: Literature	6	2	–
Art: Studio General	6	3	–	German: Language	7	3	85.7
Biology	227	15	73.1	Government Politics U.S.	49	4	98.0
Calculus AB	336	15	83.9	Gov't Politics Comparative	5	2	–
Calculus BC	192	11	95.3	Latin: Literature	2	1	–
Chemistry	185	14	73.5	Music Theory	17	3	88.2
Computer Science A	17	6	88.2	Physics B	131	8	86.3
Computer Science AB	31	4	96.8	Physics C: Mechanics	59	3	93.2
Economics: Micro	6	2	–	Physics C:Electricity & Magnetism	53	3	79.2
Economics: Macro	10	2	50.0	Psychology	145	4	82.8
English Language and Composition	824	15	72.8	Spanish: Language	83	10	88.0
English Literature and Composition	462	13	74.2	Spanish: Literature	29	3	86.2
Environmental Science	177	7	82.5	Statistics	310	11	82.9
European History	178	11	82.6	U.S. History	691	15	64.0

Dash (–) indicates when the percentage was not reported due to the small number of test-takers (fewer than 7).

The percent of AP exam scores of 3 or higher for each of the five selected courses over the last five years are presented in Figure 8. Four out of five courses show a small decrease in the percent of scores of 3 or higher from 1999-00 to 2000-01. For the past four years in the WCPSS, performance has been the highest in Calculus AB compared to the other four courses. This was not the case for the U.S., where performance has been the highest in English Literature and Composition (see Attachment for details). In the WCPSS and the U.S., the percent of scores of 3 or higher on U.S. History has been lowest over the last five years. This pattern of results was similar to results on the End-of-Course (EOC) tests where the percent of students scoring at or above Achievement III in Algebra I, Geometry, and Algebra II were among the highest of the EOC tests and U.S. History was among the lowest (see *2000-2001 End-of-Course Multiple-Choice and English II Testing Results* E&R Report No. 01.34). Recent results from the National Assessment of Educational Progress also indicate that performance in U.S. History is low relative to other subjects (Manzo, 2002) These results suggest that there may be significant differences between courses that build upon a sequence (e.g., Calculus, English) versus courses that are more independent (e.g., U.S. History). These results may also indicate that a score of 3 or higher on the AP U.S. History exam is comparatively more difficult to obtain than in some other courses. Comparison of success rates across courses may not be an appropriate way to assess the strengths and weaknesses of academic programs.

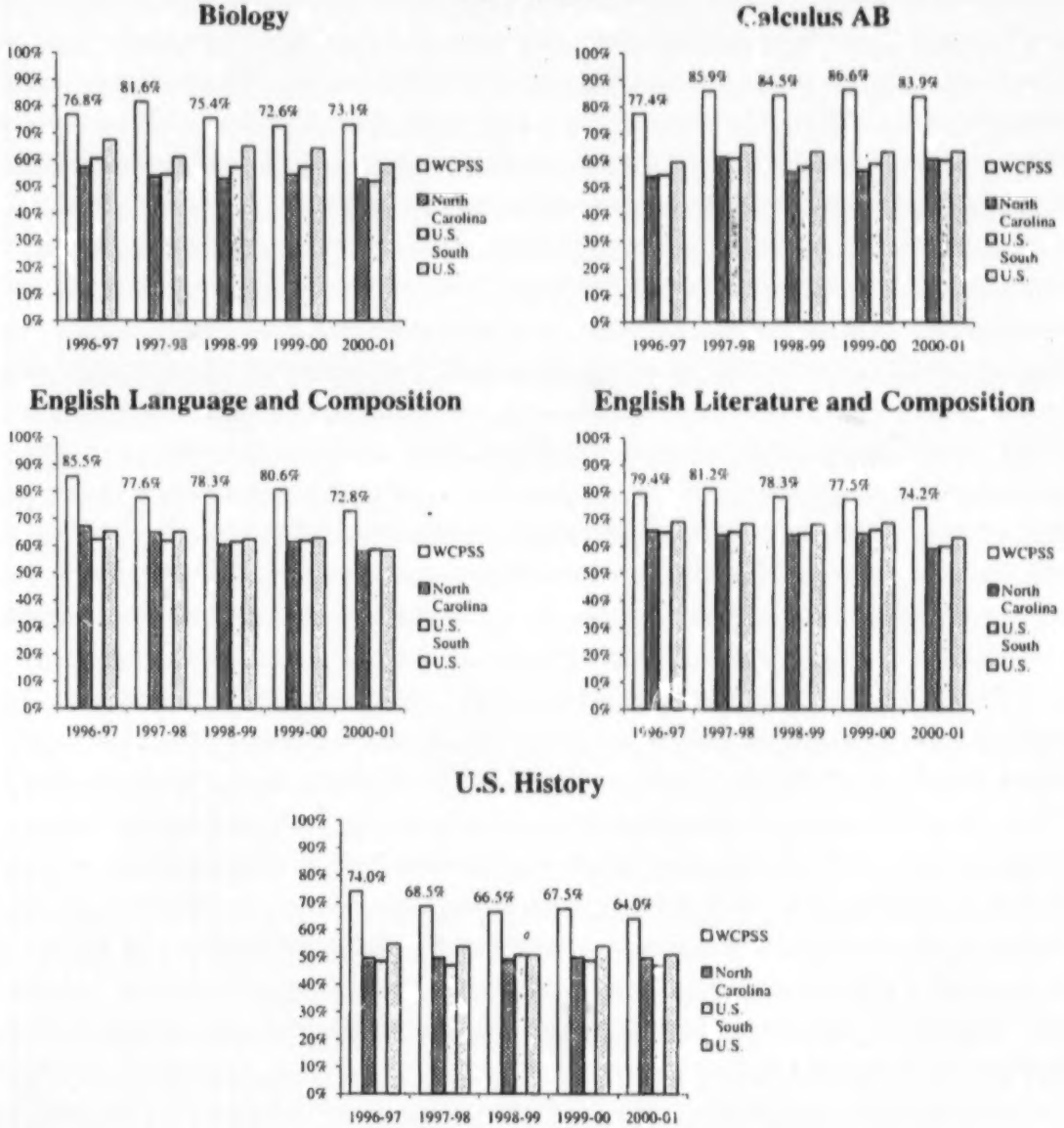
Figure 8
WCPSS Percent of Advanced Placement Exam Scores of 3 or Higher
For Selected Courses
2000-01



	1996-97	1997-98	1998-99	1999-00	2000-01
Calculus AB	77.4%	85.9%	84.5%	86.6%	83.9%
English Literature and Composition	79.4%	81.2%	78.3%	77.5%	74.2%
English Language and Composition	85.5%	77.6%	78.3%	80.6%	72.8%
Biology	76.8%	81.6%	75.4%	72.6%	73.1%
U.S. History	74.0%	68.5%	66.5%	67.5%	64.0%

In Figure 9 the percent of AP exam scores of 3 or higher for WCPSS students was compared to results for North Carolina, the U.S. South, and the U.S from 1997 to 2001. The percent of WCPSS AP exam scores that were 3 or higher exceeds the North Carolina, U.S. South, and U.S. percent of AP exam scores that were 3 or higher by a relatively large margin (18 percentage points on average) for all five courses.

Figure 9
WCPSS, North Carolina, U.S. South, and U.S.
Percent of Advanced Placement Exam Scores of 3 or Higher
For Selected Courses
1997 to 2001



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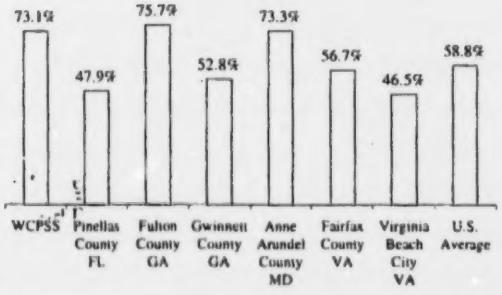
The difference between WCPSS performance and North Carolina, U.S. South, and U.S. performance was greatest for Calculus AB where WCPSS performance was on average 24 percentage points higher over the last five years. WCPSS performance in English Literature and Composition was closest to North Carolina, U.S. South, and U.S. performance, but WCPSS performance was still 13 percentage points higher on average.

COMPARISON WITH OTHER SCHOOL DISTRICTS

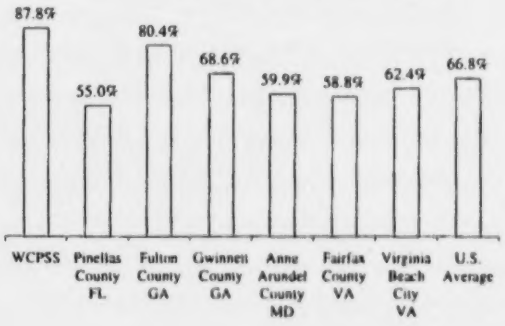
The 2000-01 WCPSS AP exam results for these selected courses were compared to the results for large school districts in other states (see Figure 10). WCPSS performance was among the highest for each of the AP subjects compared. In Calculus, WCPSS performance was the highest among the school districts compared. Except for Fulton County, Georgia, WCPSS Calculus performance was 20 percentage points or more higher than the other districts. In Biology, the WCPSS performance was similar to the two highest performing large school districts. The percentage of students in these three school districts that scored 3 or higher on the Biology AP exam was about 20 percentage points higher than the other districts. WCPSS performance was second highest in English Language and Composition but still 13 percentage points behind the highest performing comparison school district. Performance was most similar among the comparison school districts in English Literature and Composition. WCPSS performance on U.S. History was among the highest relative to the U.S. History performance of the comparison districts. More detailed comparisons including comparisons for several years can be made using the tables in the Attachment.

Figure 10
Percent of Advanced Placement Exam Scores of 3 or Higher for the WCPSS and Comparable Large School Districts for Selected Courses 2000-01

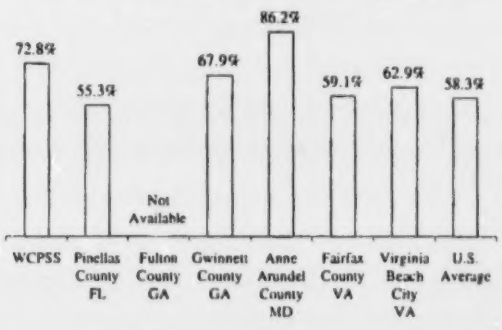
Biology



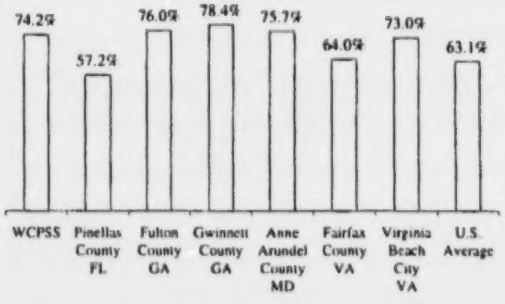
Calculus AB & BC Combined



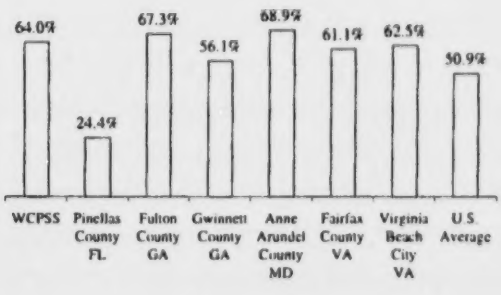
English Language and Composition



English Literature and Composition



U.S. History

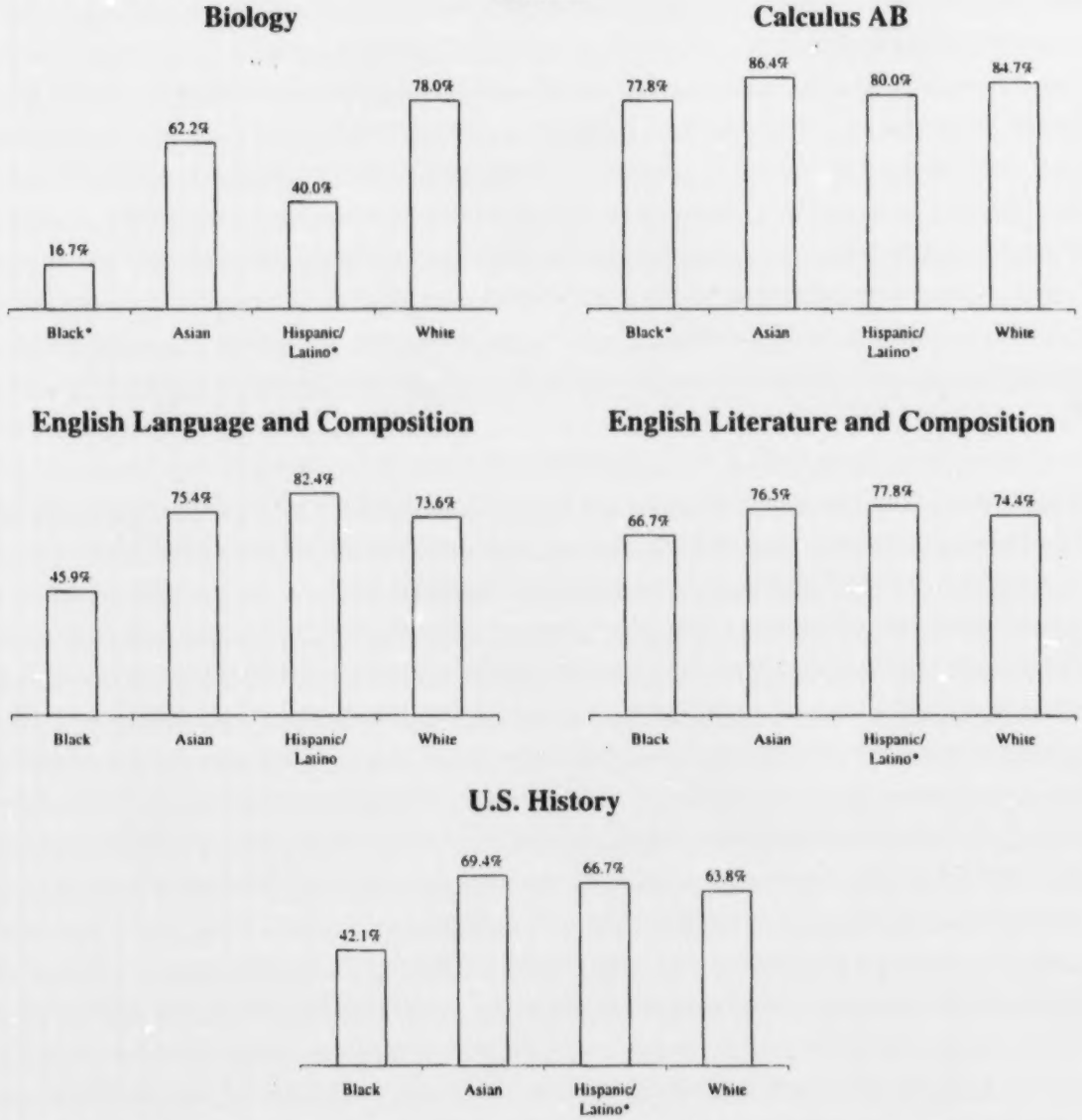


ETHNIC AND GENDER COMPARISONS

Black students had the lowest performance among the ethnic groups on AP exams for each the selected courses examined for this report. The gaps in percent of AP exam scores of 3 or higher between Black students and other ethnic groups were greatest in Biology, English Language and Composition, and U.S. History (see Figure 10). The Biology results for Black students,

however, were based on only six students and therefore should be interpreted cautiously. The same was true for the Calculus AB results for Black students where only nine students took AP exams, although their performance was much more similar to other ethnic groups. For Hispanic/Latino students the largest gap with other ethnic groups was in Biology. Again, like Black students, few Hispanic/Latino students (5) took the AP Biology exam.

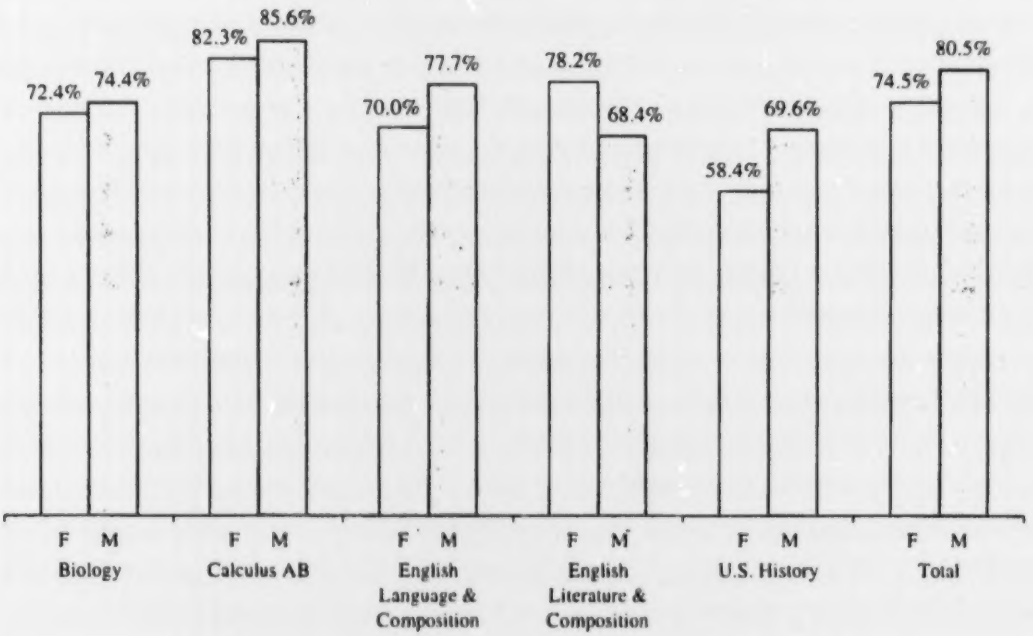
Figure 11
WCPSS Percent of Advanced Placement Exam Scores of 3 or Higher for Selected Courses by Ethnic Group[1] 2000-01



[1]Results for Native American students are not reported because there were no more than two students tested for any subject.
*Fewer than 15 students took the test.

A higher percentage of male students scored 3 or higher on AP exams than female students overall and on four out of the five courses examined (see Figure 11). About the same percentage of female and male students scored 3 or higher on Biology and Calculus AB. The biggest advantages for male students were in U.S. History where they had an 11 percentage point advantage over female students and in English Language and Composition where they had nearly an eight percentage point advantage. On the other hand, female students had nearly a 10 percentage point advantage over male students in English Literature and Composition.

Figure 12
WCPSS Percent of Advanced Placement Exam Scores of 3 or Higher for Selected Courses by Gender
2000-01



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SCHOOL RESULTS

OVERALL RESULTS

AP participation and performance over a five-year period for each of the comprehensive high schools in the WCPSS are shown in Figure 13. Shown are the number of students that took AP exams in 2000-01, the percent of students taking exams, and the percent of exams with a score of 3 or higher for the five-year period 1996-97 to 2000-01.

There was large variation in the percentage of students who took at least one AP exam each year. In 2000-01, participation ranged from 9.4% at Fuquay-Varina High School to 47.3% at Enloe High School. Enloe's high participation rate is due to the school's status as a magnet high school designated for gifted and talented students. Excluding Enloe, participation ranged from approximately 9% to 26%.

The percent of AP exam scores of 3 or higher varied greatly from school to school in 2000-01, from 51% at East Wake to 88% at Apex. All schools except East Wake and Garner exceeded the North Carolina average of 56.4% for the percent of scores 3 or higher. Athens Drive had the largest one-year increase in performance (+14.2 percentage points) and Garner High School had the largest one-year decrease in performance (-12.7 percentage points).

There was a slight tendency for schools with higher participation rates to have a higher percentage of AP exams with scores of 3 or higher ($r = 0.33$ $p<0.01$ for the period from 1996-97 to 2000-01). This tendency was most likely because the more students in a school that are preparing to enter college, the more those same students are interested in and are prepared for AP courses and exams.

There was also a slight tendency for a school's percent of AP exam scores of 3 or higher to decrease as the participation rate increased ($r = -0.36$ $p<0.01$ for the period from 1996-97 to 2000-01). This relationship was most likely the result of more students that were less well prepared for AP courses taking AP exams.

Figure 13
Advanced Placement Participation and Percent of Advanced Placement Exam Scores of 3 or Higher for WCPSS High Schools
1996-97 to 2000-01

	Participation						Performance				
High School	Number of Students Taking AP Exams	Percent of Students Taking AP Exams[1]					Percent of Exams with a Score of 3 or Higher				
		96-97	97-98	98-99	99-00	00-01	96-97	97-98	98-99	99-00	00-01
Apex	159	11.8	14.1	14.3	16.9	16.8	90.1	86.2	90.0	89.9	88.4
Athens Drive	110	15.0	14.5	12.5	18.9	15.1	76.0	74.9	80.9	64.8	79.0
Broughton	181	23.0	25.2	22.1	24.1	26.2	82.7	83.5	75.9	74.0	70.4
Cary	159	10.7	15.4	16.4	17.7	18.8	81.5	80.8	76.3	78.3	78.5
East Wake	82	10.1	9.2	12.2	15.6	12.7	56.8	62.4	52.9	63.3	51.1
Enloe	489	35.0	40.2	40.8	41.1	47.3	83.1	81.1	81.5	82.7	82.4
Fuquay-Varina	55	11.0	10.1	8.9	8.9	9.4	77.5	60.0	57.6	56.8	62.2
Garner	86	11.6	9.8	9.6	8.9	10.7	62.2	63.6	68.2	68.0	55.3
Green Hope[2]	81					24.8					85.2
Leesville	176	18.0	15.0	13.1	18.6	18.7	88.7	95.7	94.2	91.3	86.6
Millbrook	135	12.8	15.3	19.9	21.3	17.1	83.2	77.9	80.4	75.2	74.7
Sanderson	115	14.0	14.0	15.9	17.5	17.3	83.0	79.6	79.8	75.8	82.1
Southeast Raleigh	192		4.2	14.6	15.4	19.1		71.4	67.3	75.4	66.6
Wake Forest-Rolesville	76	13.3	14.7	19.2	11.6	12.8	76.3	80.3	53.9	68.8	76.8
Wakefield[2]	36					19.9					63.5
WCPSS	2,223	16.3	17.4	18.0	18.9	19.7	80.4	79.9	77.8	78.1	77.2

[1]Percent of students taking AP exams in 2000-01 is based on WCPSS Membership as of May 1, 2001 in grades 11 and 12.
[2]Rate for 2000-01 is based on grades 9-11. Green Hope opened in 1999-00. Wakefield opened in 2000-01.

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RESULTS BY AP COURSE

Figure 14 shows results for selected AP exams (Biology, Calculus AB, English Language and Composition, English Literature and Composition, and US History) by school. Participation (percent of juniors and seniors taking the exam) and performance (percent of AP exams receiving a score of 3 or higher) are shown for each high school.

Figure 14
WCPSS Participation and Performance by High School:
Results for Selected Advanced Placement Courses
2000-01

	Biology		Calculus AB		English Language & Composition		English Literature & Composition		U.S. History	
High School	Percent of Jrs/Srs Taking Exam	Percent of Scores 3 or Higher	Percent of Jrs/Srs Taking Exam	Percent of Scores 3 or Higher	Percent of Jrs/Srs Taking Exam	Percent of Scores 3 or Higher	Percent of Jrs/Srs Taking Exam	Percent of Scores 3 or Higher	Percent of Jrs/Srs Taking Exam	Percent of Scores 3 or Higher
Apex	1.7	56.3	4.4	100.0	4.8	73.3	1.9	100.0	4.0	89.5
Athens Drive	1.6	66.7	3.8	100.0	5.2	84.2	2.6	78.9	6.6	62.5
Broughton	2.9	60.0	1.7	58.3	9.6	77.3	4.1	78.6	9.6	47.0
Cary	2.5	76.2	4.5	97.4	4.1	82.9	4.1	74.3	8.1	69.1
East Wake	1.1	42.9	2.6	47.1	3.6	60.9	7.3	57.4	3.7	37.5
Enloe	3.2	72.7	8.1	78.6	23.5	75.7	14.6	78.1	15.5	71.3
Fuquay-Varina	0.3	–	0.3	–	1.5	22.2	2.2	53.8	1.5	55.6
Garner	1.4	100.0	1.5	66.7	6.5	36.5	1.9	60.0	4.1	30.3
Green Hope	8.0	84.6	1.2	–	16.0	86.5	0.0	0.0	17.8	86.2
Leesville	1.9	83.3	5.0	93.6	7.9	73.0	1.9	94.4	2.5	66.7
Millbrook	0.6	–	2.5	75.0	4.6	83.3	4.3	64.7	4.9	61.5
Sanderson	3.8	92.0	5.1	97.1	3.2	90.5	1.4	55.6	3.0	80.0
Southeast Raleigh	1.6	68.8	2.0	40.0	8.1	65.4	4.2	71.4	7.0	41.4
Wake Forest-Rolesville	0.5	33.3	0.5	100.0	4.7	78.6	5.6	81.8	3.0	83.3
Wakefield	6.6	41.7	1.7	100.0	11.6	61.9	0.0	0.0	8.8	75.0
WCPSS		73.1		83.9		72.8		74.2		64.0

Note: The range in the number of test-takers for each exam in 2000-01: Biology (2-33), Calculus AB (2-84), English Language (9-243), English Literature (9-151), and U.S. History (9-160).

Dash (–) indicates when the percentage was not reported due to the small number of test-takers (fewer than 7).

There were fairly wide differences between schools in each of the five courses examined. In Biology, the percent of students that scored 3 or higher ranged from 100% at Garner High School to 33.3% at Wake Forest-Rolesville High School. As noted earlier, the WCPSS had strong performance in Calculus AB, and this was reflected in four schools having 100% of students scoring 3 or higher. On the other hand, there were two schools with less than 50% of students scoring 3 or higher on Calculus AB. There were similarly wide differences between schools in the percent of students that scored 3 or higher in English Language and Composition from 90.5% (Sanderson) to 22.2% (Fuquay-Varina); in U.S. History the difference between schools ranged from 89.5% (Apex) to 30.3% (Garner). The smallest difference in the percent of students that scored 3 or higher was in English Literature and Composition with Apex at 100% and Fuquay-Varina 53.8%.

There were also some wide differences in the percent of students scoring 3 or higher on each of these five exams within a school. The largest difference in the percent of students that scored 3 or higher was at Garner High School where 100% students taking the AP Biology scored 3 or higher and only 30.3% scored 3 or higher on the U.S. History exam. Enloe High School had the most consistent performance across all five courses.

CONCLUSIONS AND RECOMMENDATIONS

The overall rate of participation in AP courses and testing has increased slightly over the last five years. The rate of participation in AP courses and testing, however, varies widely among ethnic groups and among schools and even within schools. *In this report, the most significant finding was that Black students were under-represented in AP courses by a ratio of three to one when enrollment in AP courses was compared to 11th and 12th grade membership.* Hispanic/Latino students were under-represented by a ratio of almost one and one-half to one. In contrast, Asian students were over-represented by a ratio of more than two to one and White students were slightly over-represented. Students may be under-represented in AP course enrollment due to differences in educational goals, differences in academic preparation, or differences in expectations of students, parents, and teachers in the ability of students to handle the challenges of AP courses. Further research would provide a better understanding of the significance of these factors.

Recommendation #1: Schools should develop strategies to increase the participation of Black and Hispanic/Latino students in AP courses and taking AP exams. Research has found that having open enrollment for advanced level courses, rather than placing students based on teacher recommendation or course prerequisites, is not enough (Yonezawa, Wells, & Serna, 2002). Any effort to increase participation should employ several strategies simultaneously to address the academic and social barriers to participation. Academic strategies might include examining additional indicators of student potential such as 8th grade End-of-Grade or End-of-Course test scores, or improving the performance of Black students in prerequisite courses so that they have the necessary skills and knowledge to attempt AP courses. Social barriers include teacher and parent expectations. Also, some Black parents feel reluctant to push their children to take more advanced courses. Participation of Black students may be hampered because Black students feel socially isolated when they are only a handful of students in advanced courses and consequently may prefer courses where they have greater social support and acceptance (Viadero, 2000; Yonezawa, Wells, & Serna, 2002).

While WCPSS performance on the AP exams, as measured by the percent of students achieving a score of 3 or higher, has decreased slightly over the last five years as participation has increased, *WCPSS performance was strong relative to the state of North Carolina, the South, the United States, and a sample of large school systems in other states.* Performance in Calculus was clearly a strong point for the WCPSS. There was also parity among ethnic groups and females and males in Calculus performance. WCPSS performance was lowest in U.S. History, as was true of North Carolina, the South, and the United States. Performance among and within schools varied widely, however, both overall and by course. Greater consistency in performance across schools and particularly within subject areas would be a significant improvement.

Recommendation #2: The WCPSS and schools should provide regular opportunities for teachers to share strategies for increasing student participation and performance across subjects and across schools. Such an effort should also include the study of areas where the AP participation and performance have been strong for the school system as a whole or for specific subjects in individual schools to determine if there are strategies that can be adopted to improve performance in AP courses. Additionally, the WCPSS should examine AP programs in other school systems where the participation or performance is stronger than the WCPSS results. Schools within the WCPSS should do the same by examining the programs in the school as well as strong programs in other WCPSS schools.

Black student performance lags significantly behind other ethnic groups. The percentage of Black students scoring 3 or higher was approximately 25 percentage points lower than other ethnic groups. In all five of the AP courses that were examined in more depth, the percentage of Black students scoring 3 or higher was also lower than other ethnic groups. The biggest differences were in Biology, English Language and Composition, and U.S. History.

Recommendation #3: Schools should develop strategies to improve the performance of Black students on AP exams without decreasing participation. While the need to provide extra support to low performing students is widely recognized, the National Task Force on Minority High Achievement advocated the provision of extra support for all minority students (1999). Others have emphasized the need for such support to be a *regular, sustained* part of the school program, rather than simply an add-on (e.g., tutoring) in which students elect to participate (Balfanz, McPartland, & Shaw, 2002). Increasing participation, as called for in Recommendation #1, will not be seen as successful unless performance of those students who participate also improves.

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ATTACHMENT

Figure 15
WCPSS, North Carolina, U.S. South, and U.S.
Percent of Advanced Placement Exam Scores of 3 or Higher
For Selected Courses
1997 to 2001

		1996-97	1997-98	1998-99	1999-00	2000-01
Biology	WCPSS	76.8	81.6	75.4	72.6	73.1
	North Carolina	57.4	54.0	53.1	54.5	52.8
	U.S. South	60.4	54.6	57.3	57.6	52.1
	U.S.	67.3	60.9	65.0	64.2	58.5
Calculus AB	WCPSS	77.4	85.9	84.5	86.6	83.9
	North Carolina	54.2	61.2	55.9	56.6	60.8
	U.S. South	54.7	60.9	57.8	59.0	60.3
	U.S.	59.3	65.8	63.4	63.2	63.6
English Language and Composition	WCPSS	85.5	77.6	78.3	80.6	72.8
	North Carolina	67.0	64.7	60.3	61.4	57.9
	U.S. South	62.3	61.8	61.5	61.9	58.7
	U.S.	65.1	64.9	62.2	62.9	58.3
English Literature and Composition	WCPSS	79.4	81.2	78.3	77.5	74.2
	North Carolina	65.8	64.2	64.4	64.8	59.3
	U.S. South	65.1	65.3	64.8	66.2	60.1
	U.S.	68.9	68.1	68.2	68.7	63.1
U.S. History	WCPSS	74.0	68.5	66.5	67.5	64.0
	North Carolina	49.7	49.9	49.2	49.9	49.7
	U.S. South	48.6	47.1	50.8	48.8	47.0
	U.S.	54.7	53.7	50.8	53.9	50.9

Figure 16
Percentage of Advanced Placement Exam Scores of 3 or Higher for Comparable Large School Districts 2000-01

	WCPSS	Pinellas County FL	Fulton County GA	Gwinnett County GA	Anne Arundel County MD	Fairfax County VA	Virginia Beach City VA	U.S.
Biology	73.1	47.9	75.7*	52.8	73.3	56.7	46.5	58.8
Calculus AB	87.8*	55.0	80.4	68.6	59.9	58.8	62.4	66.8
Chemistry	73.5*	48.9	66.7	66.5	54.8	60.7	61.6	57.9
English Language and Composition	72.8	55.3	–	67.9	86.2*	59.1	62.9	58.3
English Literature and Composition	74.2	57.2	76.0	78.4*	75.7	64.0	73.0	63.1
Foreign Language	85.2	68.8	95.1*	56.3	72.2	69.9	74.8	72.8
Physics	93.4*	59.9	66.5	65.0	55.4	56.8	59.8	63.7
Statistics	82.9*	59.9	71.7	63.5	61.6	49.7	52.0	59.8
U.S. History	64.0	24.4	67.3	56.1	68.9*	61.1	62.5	50.9

Dash (–) indicates data not available.
*Highest percentage for the subject across school districts compared.

Figure 17
Percent of Biology Advanced Placement Exam Scores of 3 or Higher for the WCPSS and Comparable Large School Districts

School District	1997-1998		1998-1999		1999-2000		2000-2001	
	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher
Duval, FL	244	46.7	258	52.7	196	50.0	–	–
Orange, FL	82	58.5	101	62.4	83	67.5	–	–
Pinellas, FL	–	–	–	–	–	–	257	47.9
Fulton, GA	113	82.3	130	74.6	119	74.8	177	75.7
Gwinnett, GA	161	63.4	216	31.9	214	66.4	267	52.8
Anne Arundel, MD	–	–	–	–	–	–	101	73.3
Wake, NC	185	81.6	209	75.1	248	72.6	227	73.1
Fairfax, VA	553	74.9	922	58.2	953	61.0	879	56.7
Virginia Beach, VA	455	47.5	344	48.8	305	51.1	314	46.5

Dash (–) indicates data not available.

Figure 18
Percent of Calculus (AB & BC Combined) Advanced Placement Exam Scores of 3 or Higher for the WCPSS and Comparable Large School Districts

School District	1997-1998		1998-1999		1999-2000		2000-2001	
	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher
Duval, FL	328	54.9	320	51.9	494	40.9	–	–
Orange, FL	298	81.9	330	85.5	318	78.3	–	–
Pinellas, FL	–	–	–	–	–	–	531	55.0
Fulton, GA	268	73.9	263	84.4	270	93.0	464	80.4
Gwinnett, GA	351	19.9	498	29.3	600	67.5	716	68.6
Anne Arundel, MD	–	–	–	–	–	–	279	59.9
Wake, NC	520	87.5	501	83.6	526	87.6	558	87.8
Fairfax, VA	1528	66.8	2662	51.4	2704	55.3	2575	58.8
Virginia Beach, VA	412	50.5	447	67.6	402	63.4	436	62.4

Dash (–) indicates data not available.

Figure 19
Percent of Chemistry Advanced Placement Exam Scores of 3 or Higher for the WCPSS and Comparable Large School Districts

School District	1997-1998		1998-1999		1999-2000		2000-2001	
	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher
Duval, FL	154	46.8	123	51.2	159	23.3	–	–
Orange, FL	81	71.6	96	69.8	100	67.0	–	–
Pinellas, FL	–	–	–	–	–	–	137	48.9
Fulton, GA	105	50.5	156	71.2	165	64.8	135	66.7
Gwinnett, GA	119	67.2	155	29.0	132	61.4	194	66.5
Anne Arundel, MD	–	–	–	–	–	–	73	54.8
Wake, NC	147	81.0	127	75.6	197	81.7	185	73.5
Fairfax, VA	408	74.0	494	59.3	484	66.5	473	60.7
Virginia Beach, VA	213	50.7	163	56.4	216	69.4	198	61.6

Dash (–) indicates data not available.

Figure 20
Percent of English Language and Composition Advanced Placement Exam Scores of 3 or Higher for the WCPSS and Comparable Large School Districts

School District	1997-1998		1998-1999		1999-2000		2000-2001	
	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher
Duval, FL	385	71.9	504	66.7	490	64.5	–	–
Orange, FL	182	68.7	245	58.8	227	62.6	–	–
Pinellas, FL	–	–	–	–	–	–	515	55.3
Fulton, GA	254	78.3	260	85.4	315	76.8	–	–
Gwinnett, GA	23	69.6	36	36.1	100	66.0	106	67.9
Anne Arundel, MD	–	–	–	–	–	–	29	86.2
Wake, NC	531	77.6	545	78.7	651	80.6	824	72.8
Fairfax, VA	279	83.5	437	68.2	481	60.9	690	59.1
Virginia Beach, VA	73	72.6	208	66.8	321	64.8	283	62.9

Dash (–) indicates data not available.

Figure 21
Percent of English Literature and Composition Advanced Placement Exam Scores of 3 or Higher for the WCPSS and Comparable Large School Districts

School District	1997-1998		1998-1999		1999-2000		2000-2001	
	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher
Duval, FL	582	62.2	621	59.3	691	59.5	–	–
Orange, FL	295	78.3	373	73.5	342	73.1	–	–
Pinellas, FL	–		–	–	–	–	684	57.2
Fulton, GA	Not available						362	76.0
Gwinnett, GA	363	82.9	397	41.1	454	85.0	468	78.4
Anne Arundel, MD	–	–	–	–	–	–	284	75.7
Wake, NC	373	81.2	350	78.9	364	77.5	462	74.2
Fairfax, VA	1358	81.6	1850	75.6	2043	73.0	2022	64.0
Virginia Beach, VA	212	83.5	236	83.5	200	88.0	263	73.0

Dash (–) indicates data not available.

Figure 22
Percent of Foreign Language Advanced Placement Exam Scores of 3 or Higher for the WCPSS and Comparable Large School Districts

School District	1997-1998		1998-1999		1999-2000		2000-2001	
	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher
Duval, FL	180	51.7	241	41.9	248	39.1	–	–
Orange, FL	270	88.1	283	84.1	247	83.0	–	–
Pinellas, FL	–	–	–	–	–	–	144	68.8
Fulton, GA	107	72.0	138	82.6	131	84.7	223	95.1
Gwinnett, GA	71	67.6	78	30.8	90	68.9	142	56.3
Anne Arundel, MD	–	–	–	–	–	–	133	72.2
Wake, NC	170	71.8	148	72.3	162	79.6	155	85.2
Fairfax, VA	912	76.3	1495	64.0	1354	68.2	1190	69.9
Virginia Beach, VA	213	68.5	254	77.2	289	57.8	290	74.8

Dash (–) indicates data not available.

Figure 23
Percent of Physics (B & C Combined) Advanced Placement Exam Scores of 3 or Higher for the WCPSS and Comparable Large School Districts

School District	1997-1998		1998-1999		1999-2000		2000-2001	
	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher
Duval, FL	100	58.0	79	64.6	90	38.9	–	–
Orange, FL	152	59.2	126	65.1	147	76.9	–	–
Pinellas, FL	–	–	–	–	–	–	157	59.9
Fulton, GA	158	63.9	186	69.4	321	68.8	358	66.5
Gwinnett, GA	71	87.3	92	23.9	109	67.9	200	65.0
Anne Arundel, MD	–	–	–	–	–	–	198	55.4
Wake, NC	230	66.1	249	84.3	220	78.6	243	93.4
Fairfax, VA	364	71.4	632	54.9	802	52.5	770	56.8
Virginia Beach, VA	104	73.1	166	57.2	189	48.7	194	59.8

Dash (–) indicates data not available.

Figure 24
Percent of Statistics Advanced Placement Exam Scores of 3 or Higher for the WCPSS and Comparable Large School Districts

School District	1997-1998		1998-1999		1999-2000		2000-2001	
	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher
Duval, FL	20	20.0	22	0.0	95	20.0	–	–
Orange, FL	84	50.0	58	67.2	106	56.6	–	–
Pinellas, FL	–	–	–	–	–	–	157	59.9
Fulton, GA	116	52.6	109	81.7	199	65.8	269	71.7
Gwinnett, GA	230	50.9	208	27.4	293	60.1	480	63.5
Anne Arundel, FL	–	–	–	–	–	–	198	61.6
Wake, NC	203	85.7	286	88.8	290	69.0	310	82.9
Fairfax, VA	124	86.3	342	49.1	553	47.9	628	49.7
Virginia Beach, VA	116	52.6	151	41.7	191	47.6	150	52.0

Dash (–) indicates data not available.

Figure 25
Percent of U.S. History Advanced Placement Exam Scores of 3 or Higher for the WCPSS and Comparable Large School Districts

School District	1997-1998		1998-1999		1999-2000		2000-2001	
	Number of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher	Numbe r of Exams	Percent of scores of 3 or Higher	Number of Exams	Percent of scores of 3 or Higher
Duval, FL	872	35.2	923	39.4	1001	37.3	–	–
Orange, FL	279	57.3	335	41.2	277	41.9	–	–
Pinellas, FL	–	–	–	–	–	–	573	24.4
Fulton, GA	313	77.0	391	66.2	524	57.3	547	67.3
Gwinnett, GA	262	58.0	426	24.2	298	58.1	874	56.1
Anne Arundel, MD	–	–	–	–	–	–	386	68.9
Wake, NC	479	68.5	510	68.2	644	67.5	691	64.0
Fairfax, VA	1814	66.9	2477	56.7	2530	60.6	2420	61.1
Virginia Beach, VA	325	64.6	259	64.1	352	54.3	304	62.5

Dash (–) indicates data not available.

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